

REMARKS/ARGUMENTS

Claim 11 was previously canceled without prejudice or disclaimer. Claims 1 and 10 are amended to further clarify the features of the claimed subject matter. Support for the amendment is found in the Specification. No new matter is added. Claims 1 – 10 are presented for reconsideration and further examination in view of the following remarks.

The Rejections under 35 U.S.C. § 103(a)

The Office Action rejects Claims 1-9 under 35 U.S.C. § 103(a) over Long (U.S. Patent No. 4,678,435) in view of Wilson (U.S. Patent No. 5,487,663) further in view of Dougherty (U.S. Patent No. 3,647,498). Applicant respectfully disagrees, and traverses these rejections for at least the following reasons.

From the description and illustration in the present patent application, the dental crown of the claimed subject matter is a **single-layer continuous structure**. In fact, application Figs. 1 and 2 show a single layer dental crown of the in perspective and sectional views. Page two, first paragraph of the Detailed Description clarifies this issue as follows:

Crown 10 may readily be mounted, by conventional methods, such as through the use of dental cement in the mouth of a patient, typically a child, as part of treatment of primary teeth and permanent molars having extensive carious lesions. (Emphasis added).

Thus, the crown of the claimed subject matter has a single-layer continuous structure made of a thermoplastic polymer material configured to be directly mountable onto a tooth and be formed by a tooth shape top surface and flexible depending side surfaces extending from said tooth shape top surface.

Additionally, the bottom portion of at least one of the flexible depending side surfaces has an inner surface shaped with an **undercut defining the inwardly directed bottom portion**. As described in the present application, the crown of the invention is configured to provide, *inter alia*, desired resilience of the depending side surfaces (see, e.g., paragraphs 0023 and 0028 of the as-published U.S. application). As stated in these two paragraphs:

[0023] The crown of the present invention is characterized by high tensile strength, high impact resistance and stiffness, excellent fatigue endurance and resistance to moisture, excellent dimensional stability and sufficient resilience and resistance to creep. It has the natural appearance of a vital tooth . . . [and]

[0028] Fig. 3C shows an ejection stage wherein ejector 26, driven by a piston 28 moves upwardly relative to bottom mold element 24 and pushes crown 10 out of cavity 20. Due to the resilience of the depending side surfaces 14, the action of the ejector 26 is able to disengage the internal mold element 32 from the crown 10 notwithstanding the presence of undercut 16.

It is thus clear that the provision of the desired resilience of the side surfaces (material and thickness selection) and the provision of the undercut in the bottom portion of the inner surface of the flexible side surface(s) is aimed at enabling adjustment of the bottom portion of a crown to the specifically prepared tooth shape while preventing falling of the crown from the tooth, using a prefabricated crown.

The combination of features of the claimed subject matter cannot be learned from the cited references. Long (U.S. Patent No. 4,678,435), for example, discloses a **shell** which cannot generally be considered a crown. Also, Long clearly describes shell and crown based dental techniques (see for example col. 3 lines 39-63). More specifically it is clear from the description in Long that the **shell is used to be positioned over the**

tooth and serves as a form for mounting the crown thereon. The shell in Long is therefore to be **filed with another material** in order to enable mounting of the crown thereon. The **excess of this material goes away from the sides** of the shell. For that reason exactly the sides in Long are left open to provide precise interproximal contact areas.

Thus, Long's shell presents a dental appliance different from that of the invention in its intended use and configuration. The configuration of Long's shell is different from that of the crown of the claimed subject matter at least because the shell in Long is open along mesial and distal sides thereof, while the crown of the claimed subject matter has flexible sides in order to wrap the tooth. Long's shell is not a crown readily mountable onto to the tooth, nor is Long's shell flexible. It is thus clear that the crown of the claimed subject matter is different from Long's shell **not only in the flexibility related feature** as indicated by the Examiner, but has additional essential distinguishing features as described above.

Wilson (U.S. Patent No. 5,487,663) fails to make up for these deficiencies. Wilson relates to a dental appliance capable of serving as a crown form. The Wilson appliance, like the Long appliance, needs to be filed with an additional layer of composite restorative material. At the end of the Wilson installation procedure the appliance is cut away, leaving the composite restorative material to serve as a crown (see Wilson Abstract and Wilson col. 4 lines 8-24 and 47-55). Accordingly, Wilson also fails to teach or suggest each and every feature of amended claim 1.

Thus, neither Wilson nor Long, alone or combined, discloses a combination of features of the claimed subject matter recited in claim 1. Accordingly, Wilson and Long, individually or in combination, do not disclose or suggest all the features of Applicant's

independent claim 1. Accordingly, the subject matter of Applicant's independent claim 1 is not obvious in view of Wilson and Long. Applicant further submits that claims 2-9 are also allowable at least because they depend from independent claim 1. For at least the above reasons, Applicant respectfully requests withdrawal of the rejection of claims 1 – 9 under 35 U.S.C. 103(a).

The Office Action also rejects claim 10 under 35 U.S.C. 103(a) as allegedly unpatentable over Kennedy in view of Dougherty and further in view of Karmaker (U.S. Patent No. 6,186,790). Applicant respectfully traverses this rejection for at least the following reasons.

Applicant respectfully submits that the arguments with regard to Kennedy presented in the response to the previous office actions are correct and clearly show the differences between the invention and the technique of Kennedy. Kennedy's device is not a **dental crown configured to be readily mountable in a patient's mouth as part of treatment of primary teeth and permanent molars (i.e. a definite restoration)** but rather is "an improved crown **form** which serves as a mold or matrix for shaping and positioning of a composite resin material used to restore a damaged tooth" (col. 4 lines 11-14) (emphasis added) where, according to Kennedy, such crown form differs from the prior art "strip crowns in that the new crown form is much easier to handle, load and position on the tooth and is not subject to deformation problems" (col. 4 lines 15-20). Therefore, the Kennedy device is not a final restorative device but a form aimed at shaping a composite restoration. It is intended to be removed.

Furthermore, a portion 13 of the crown form as shown in the figure of Kennedy is not an **undercut made in the bottom portion of the flexible side surface**, but rather

is an integral part with a continuous **outwardly extending** flange 20 which presents the bottom end of the crown form at the base of the tooth form to provide, together with a tab 23 extending from the flange, a gripping surface for the crown form. It is thus clear that the combination of features of Claim 10, as previously presented and as currently amended, is neither taught nor suggested from the above cited references.

Thus, the combined references do not disclose or suggest all the features of amended claim 10. In other words, the secondary references, cited in the Office Action to teach other features of claim 10, still do not teach each and every feature of amended claim 10. Accordingly, Karmaker, Kennedy, and Dougherty, individually or in combination, do not disclose or suggest all the features of Applicant's independent claim 10. In view of the above, Applicant submits that claim 10 is allowable.

Since none of the other prior art of record, whether taken alone or in any combination, discloses or suggests all the features of the claimed subject matter, Applicant respectfully submits that independent claims 1 and 10 and all the claims that depend therefrom are allowable. Accordingly, Applicant respectfully requests withdrawal of the rejection of claims 1 - 10 under 35 U.S.C. §103(a).

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CONCLUSION

In light of the foregoing, Applicant submits that the application is now in condition for allowance. If the Examiner believes the application is not in condition for allowance, Applicant respectfully requests that the Examiner contact the undersigned attorney if it is believed that such contact will expedite the prosecution of the application.

In the event this paper is not timely filed, Applicant petitions for an appropriate extension of time. Please charge any fee deficiency or credit any overpayment to Deposit Account No. 14-0112.

Respectfully submitted,
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